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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/560,525

03/14/2006

Jurgen Schulz-Harder

A-9806

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EXAMINER

CAZAN, LIVIUS RADU

ART UNIT

PAPER NUMBER

3729

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,525	<b>Applicant(s)</b> SCHULZ-HARDER ET AL.	
	<b>Examiner</b> LIVIOUS R. CAZAN	<b>Art Unit</b> 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 27-49 is/are pending in the application.
- 4a) Of the above claim(s) 28,30,33,35,40 and 49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18,27,29,31,32,34,36-39 and 41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/13/05</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of species A2, B1, C2, and D2 in the reply filed on 2/17/2009 is acknowledged.
2. Claims 28, 30, 33, 35, 40, and 49 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 2/17/2009. It should be noted that although Applicant stated "the inventive concepts are covered by claims 27, 29, 31, 32, 34-40 and 44," clearly this is incorrect, as the claims directed to the elected species and the generic claims are 27, 29, 31, 32, 34, 36-39, and 41-48.

### *Specification*

3. The disclosure is objected to because of the following informalities: In paragraph [0020] on page 6, "Al<sub>2</sub>O<sub>3</sub>" should be changed to --Al<sub>2</sub>O<sub>3</sub>--. In line 1 on page 6, "Al<sub>2</sub>O<sub>3</sub>" should be changed to --Al<sub>2</sub>O<sub>3</sub>--. On page 6, last line, "2within" should be changed to --2 within--. Appropriate correction is required.

### *Claim Objections*

4. Claims 32 and 36 are objected to because of the following informalities: Reference characters/numbers ("A" and "x") should either be provided for each structural element of every claim, or be removed completely. Appropriate correction is required.

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***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 27, 29, 31, 32, 34, 36-39, and 41-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

7. In particular, the claims are method claims, and, therefore, should positively recite the method steps. As an example, in claim 27, lines 2 and 3, "a metallization forming a plurality of metal areas is applied to at least one surface side of a ceramic layer" should read --applying a metallization forming a plurality of metal areas to at least one surface side of a ceramic layer-- or --applying, to at least one surface side of a ceramic layer, a metallization forming a plurality of metal areas--, so as to positively recite the step of applying. Likewise for other method steps.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 27, 29, 31, 32, 34, 36-39, and 41-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondratenko (US5609284) in view of Schulz-Harder (US6207221).**

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10. **Regarding claims 27, 28, 31, 34, 36-39, and 42-47**, Kondratenko discloses a method in which a ceramic layer (1; see col. 11, Ins. 39-42) is heated, in a thermal treatment or process step, in order to produce separating or break-off lines (4), wherein the heating of the ceramic layer during the thermal treatment or process step takes place progressively and without vaporization or burning of the ceramic material in a treatment area (2) that moves in relation to the ceramic layer, and that after the heating process the ceramic is progressively shock-cooled so that a controlled fracture or weakening of material is effected in the ceramic layer in order to produce the separating or break-off line (4). The heating of the ceramic layer during the thermal treatment or process step is effected by means of a laser beam (2; see col. 5, Ins. 49-67) focused in order to form an oval focus (see 2 in Figs. 1 and 4), with its greater cross-section axis oriented in the processing direction. A break-off line (4) is produced in the ceramic layer by means of the thermal treatment or process step, enabling subsequent controlled mechanical breaking of the ceramic layer. The cooling of the ceramic layer is effected with a fluid coolant stream (3; see col. 6, Ins. 5-18) progressively and point by point at a pre-defined spatial and temporal distance from the heating. The thermal treatment is effected along a groove (4) produced on at least one surface side of the ceramic layer.

11. However, Kondratenko does not disclose applying this technique to a ceramic layer having a thickness between 0.1 and 3 mm and to which a metallization forming a plurality of metal areas has been applied on at least one surface, whereby the separating or break-off lines are formed between the metal areas so as to separate the substrate into multiple substrates, at least one metal area having been formed using a

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thick film process or thick film technology, at least one metal area having a thickness between 0.02 and 0.6 mm or between 0.1 and 0.6 mm, the metal areas on one surface of the ceramic layer being at a distance between 0.1-3 mm from each other, the ceramic layer being selected from the mullite group,  $\text{Al}_2\text{O}_3$ ,  $\text{AlN}$ ,  $\text{Si}_3\text{N}_4$ ,  $\text{SiC}$ ,  $\text{BeO}$ ,  $\text{TiO}_2$ ,  $\text{ZrO}_2$ , or  $\text{Al}_2\text{O}_3$  with a  $\text{ZrO}_2$  content.

12. Schulz-Harder discloses (see Figs. 1-3) an  $\text{AlN}$  ceramic layer (2a) with a thickness of 0.2 to 2 mm (see col. 2, lns. 1-6 and 21-25) having metal areas 3 with a thickness of 0.1 to 6 mm (see col. 2, lns. 21-29) and metal area 4 formed using a thick film process (see conductor paste in col. 2, lns. 30-56). Individual substrates are produced by breaking the larger substrate into individual substrates along scored lines (8).

13. At the time the invention was made, it would have been obvious to one of skill in the art to utilize the method of Kondratenko to separate a larger substrate such as that of Schulz-Harder into individual substrates, since the process of Kondratenko provides an alternative method of producing separating lines for separating a large substrate into smaller substrates. One of ordinary skill in the art would have been motivated to do so for the advantages the technique of Kondratenko provides over the conventional methods.

14. **Regarding claim 41**, Kondratenko and Schulz-Harder disclose substantially the claimed invention, except for the ceramic layer being located on a self-adhesive foil for separation into single substrates.

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15. The Examiner takes Official Notice that it is very well known in to use an adhesive foil, such as blue foil, to hold a substrate which is to be separated into individual smaller substrates.

16. Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to utilize such a tape with the ceramic layer of Kondratenko and Schulz-Harder, in order to facilitate the separation of the ceramic layer into individual substrates, as in the conventional art.

17. **Regarding claim 48**, Kondratenko and Schulz-Harder do not explicitly disclose metal areas that are 0.1-3 mm from each other. However, Kondratenko utilizes a laser spot having a width dimension  $a$  given by the formula  $a=0.2$  to  $20 h$  (see col. 7, lns 20-23; see Fig. 1). Therefore, for a ceramic layer thickness of say 0.2 mm,  $a$  would be between 0.04 and 4 mm. Clearly, the laser spot must be applied to an area not covered by metal, and, therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to separate the metal areas by a sufficiently large distance, such as *at least* as large as the value  $a$ , in order to ensure the laser can properly heat the ceramic layer. Therefore, it would have been obvious to separate the metal layers by a distance as claimed.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIVIUS R. CAZAN whose telephone number is (571) 272-8032. The examiner can normally be reached on M-F 8:00AM-4:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DERRIS H. BANKS can be reached on (571) 272-4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. Dexter Tugbang/  
Primary Examiner  
Art Unit 3729

/L. R. C./ 5/28/2009  
Examiner, Art Unit 3729